

Figure 1 Pixel's circuitry obscures sensitive area

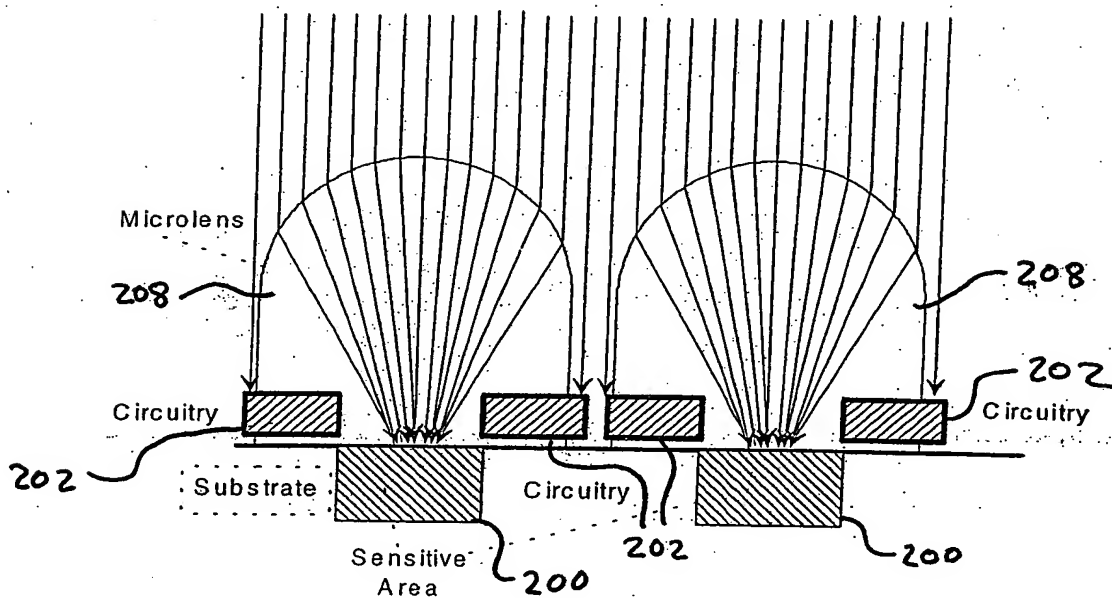


Figure 2 Microlens focuses most of the light on sensitive area

10008606 120601

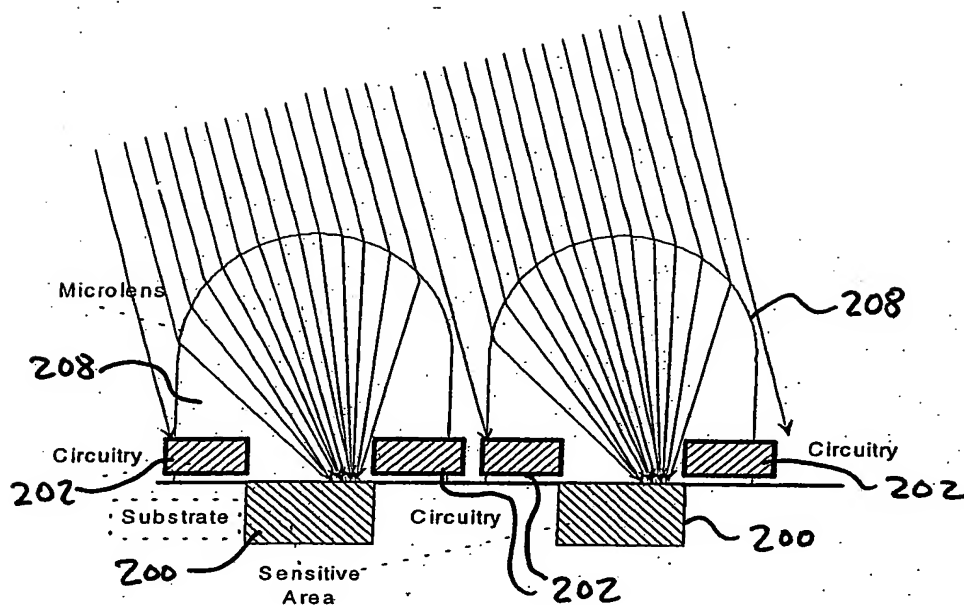


Figure 3 Off axis illumination

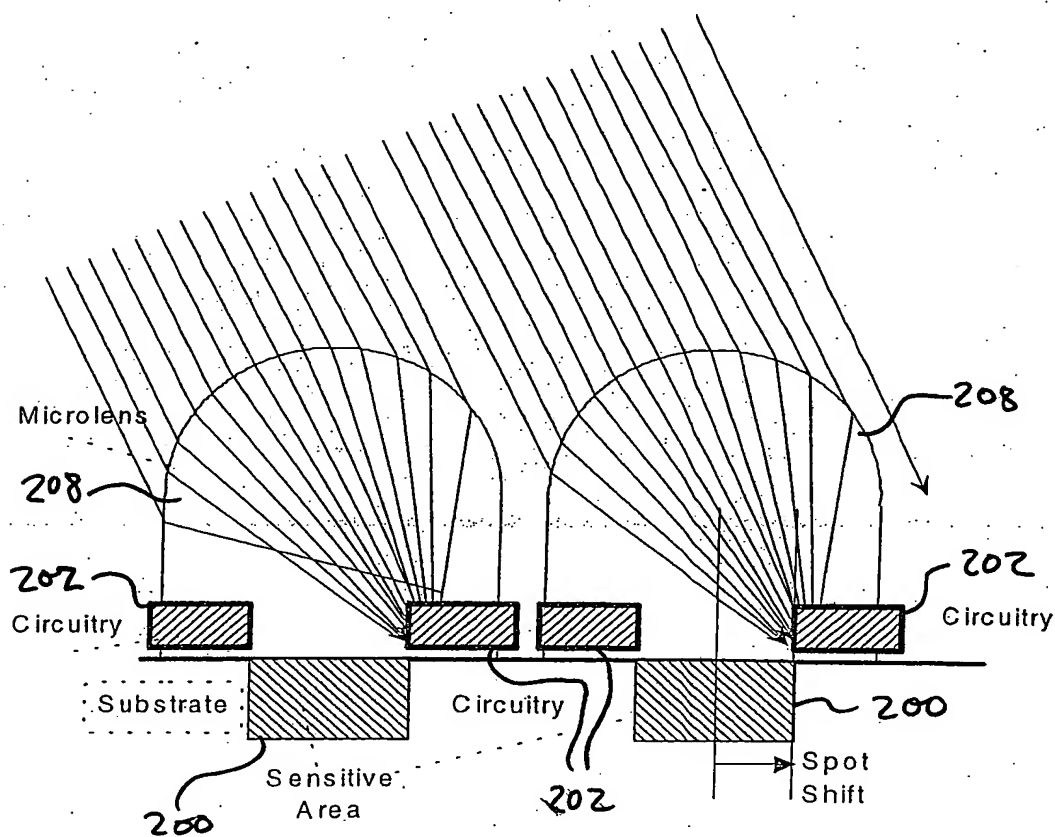


Figure 4 Off-axis illumination with Vignetting

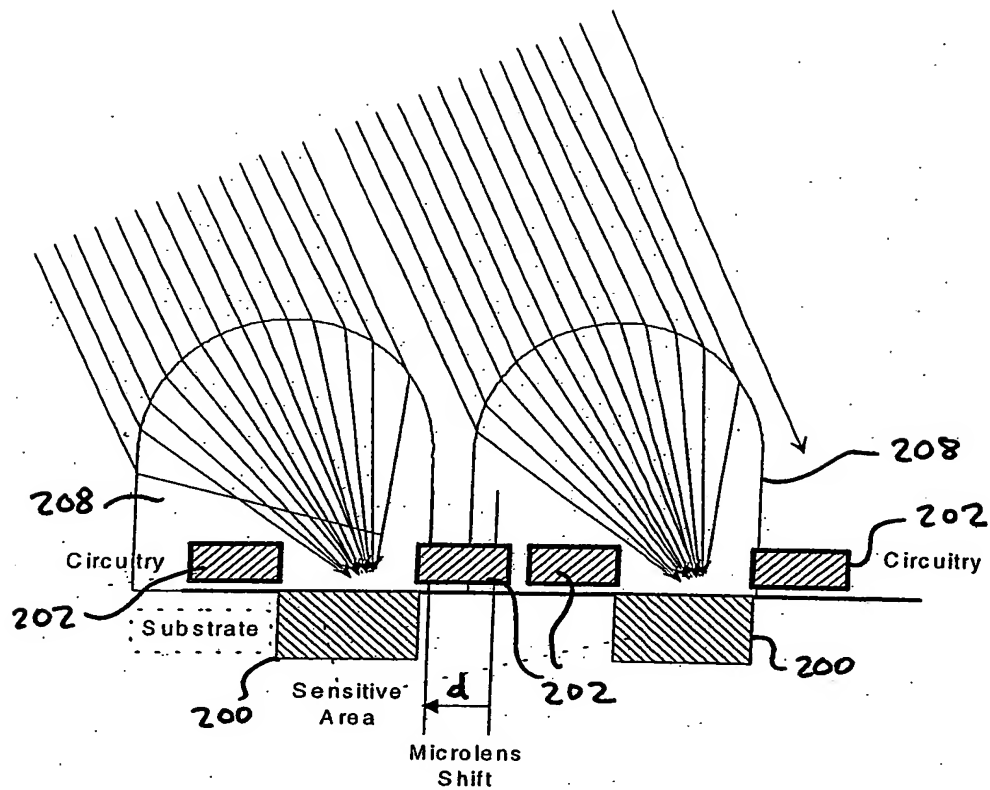


Figure 5 Off-axis illumination with shifted microlens

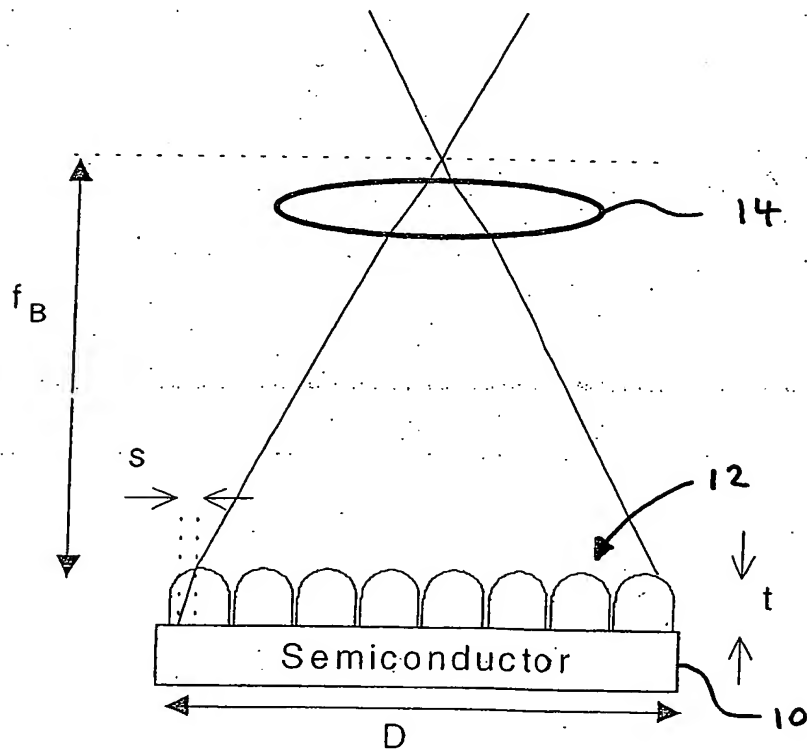


Figure 6 Microlens Shift Approximation

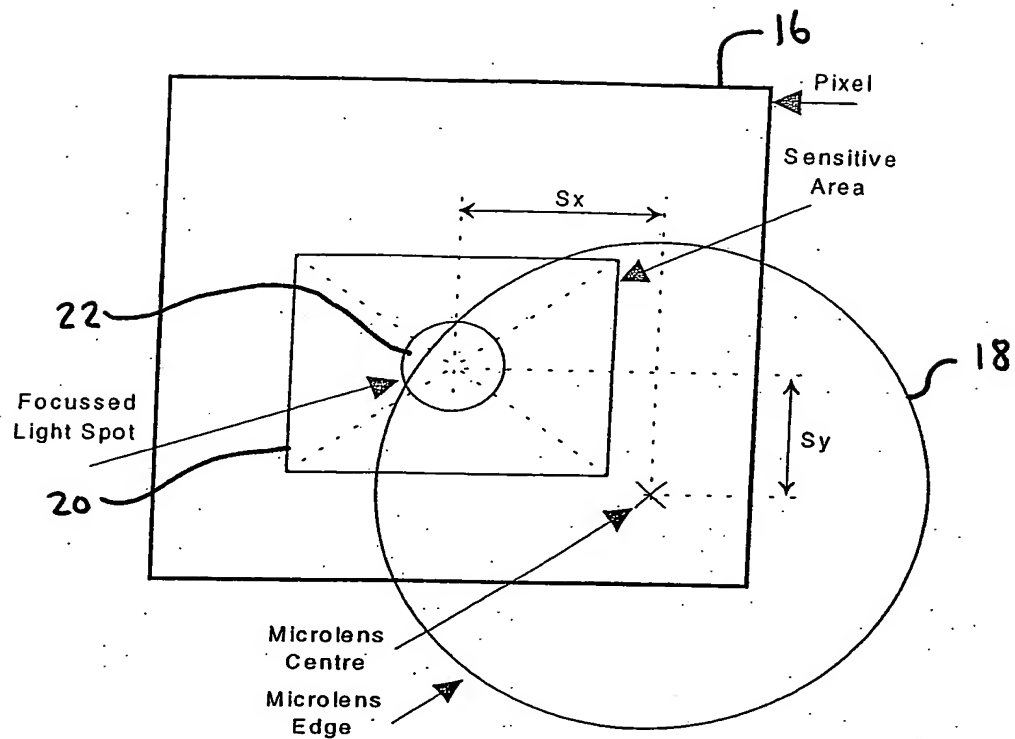


Figure 7 Pixel at Top-Left of array with shifted microlens

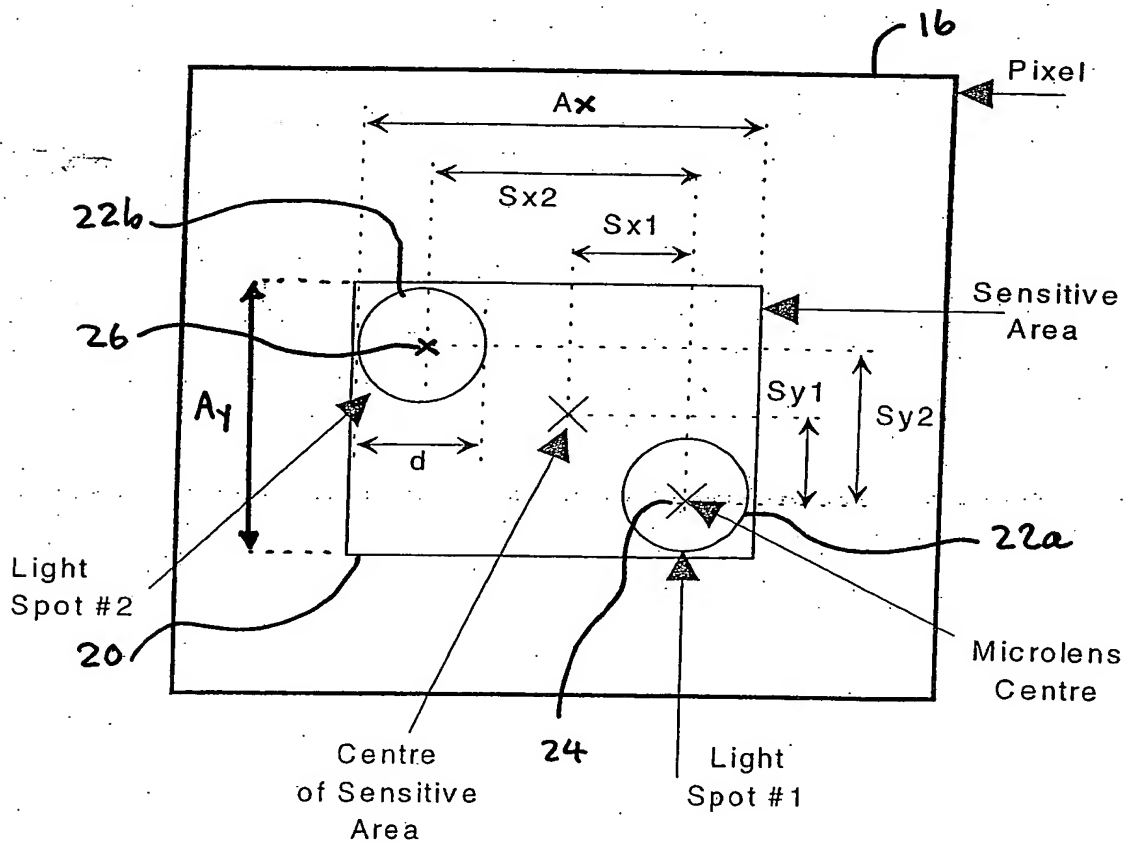


Figure 8 Pixel plan view with different primary lenses

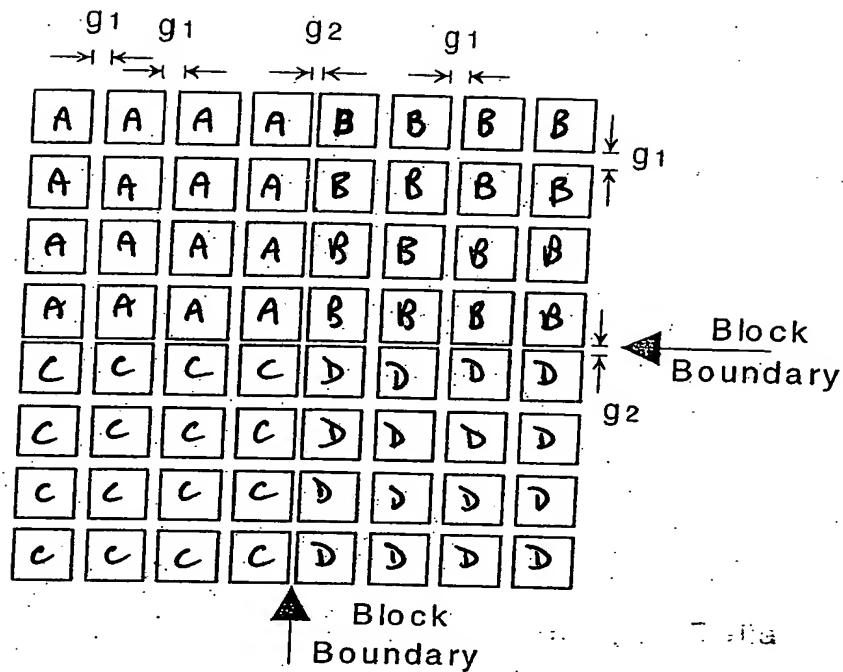


Figure 9 Block shift of microlenses – narrower gaps

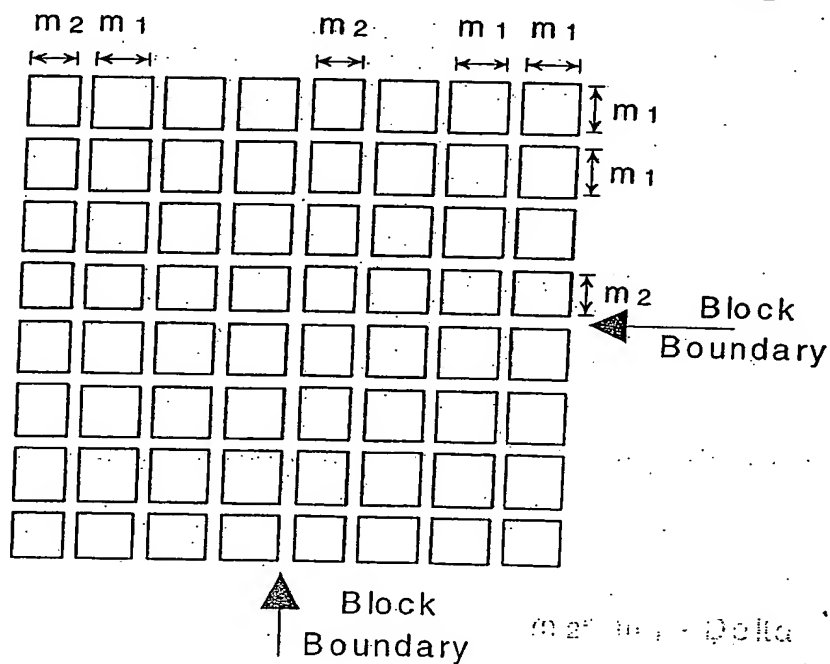
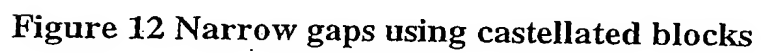
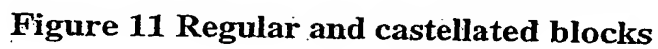


Figure 10 Block shift of microlenses - smaller lenses



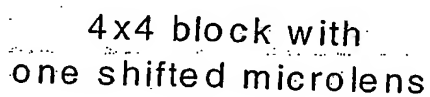
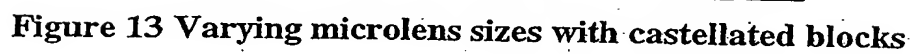


Figure 14 Modified block which tessellates